

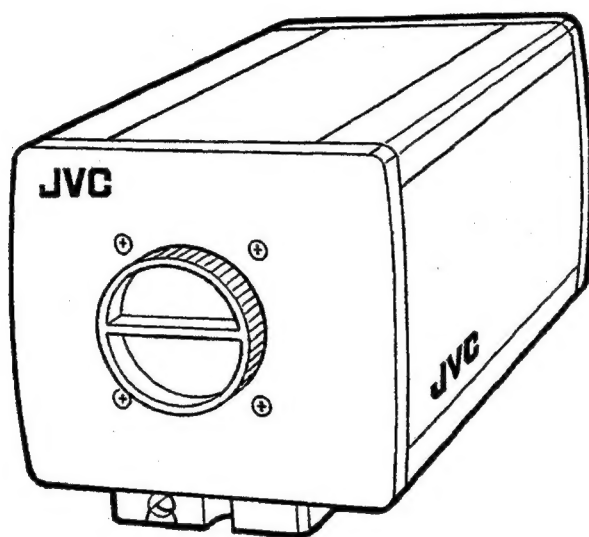
JVC

COLOUR VIDEO CAMERA HEAD

TK-1070E

BASIC CHASSIS

V57



SPECIFICATIONS

Item	Content
Type	Colour video camera head
Signal system	Based on PAL standard
Image pick up element	2/3-inch interline-transfer system CCD solid-state image sensor (single board type, with complementary color system)
Number of effective pixels	756(H) × 581(V)
Scanning lines	625lines, 2:1 interlaced
Scanning frequency	15,625Hz(H) , 50Hz(V)
Sync. system	Internal / External (Automatic)
Sync. input	Composite video signal : 1Vp-p, 75Ω unbaranced(BNC connector) Black burst signal : 0.45Vp-p, 75Ω HD / VD : 4Vp-p, 75Ω (Negative)
Sync. output	Composite sync. signal : 2Vp-p, 75Ω (Negative)
Video output	Composite video signal : 1Vp-p, 75Ω unbaranced(BNC connector) Separated Y/C video signal : Y / 1Vp-p, 75Ω unbaranced C / 0.3Vp-p(burst) , 75Ω unbaranced
Video S/N	RGB video signals : 0.7Vp-p, 75Ω 47dB(GAIN "0", DETAIL "OFF", GAMMA "0.45", SHUTTER "NORM")
Horizontal resolution	Composite : 460 TV lines Y/C : 470TV lines RGB : 460 TV lines
Standard required illumination	2000Lux(F5.0, 3200K)
Switching function	AGC selection "AUTO / FIX" GAIN selection "0 / + 6dB / + 12dB" SHUTTER mode selection "NORM. / 1/120 / 1/125 / 1/250 / 1/500 / 1/1000 / 1/2000 / 1/4000 / 1/10000" WHITE BALANCE mode selection "☼ (halogen lamp) / AUTO / MANU." DETAIL selection "ON / OFF" GAMMA selection "0.45 / 1"
Adjusting-function	Flange-back adjustment manual white balance adjustment (2 axes : R-B, G-Mg) H PHASE adjustment SC PHASE adjustment
Lens mount	C mount
Power requirement	DC12V (± 10%)
Power consumption	8.7VA(when input DC12V, when jointing HZ-C611AF(U))
Operating temperature range	0°C ~ +40°C
Operating humidity range	Less than 90% Rh (noncondensing)
Fuse	△ QMF51E2-1R0S (T1.0A)
Provided accessory	Lens mount cap × 1 Iris plug(3-pin) × 1 Connection cable × 1 Control section cover × 1
Dimensions	Width : 83.5mm(max.) , Depth : 135mm(max.) , Height : 82mm(max.) [including control section cover and tripod mounting base]
Weight	Approx. 710g (Only body)

Design & specification subject to change without notice.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:
To prevent electric shock, do not open the unit. No user serviceable parts inside. Refer servicing to qualified service personnel.

CAUTION:
To prevent electric shocks and risk of fire hazards, do NOT use other than the specified power source.

This installation should be made by a qualified service person and should conform to all local codes.

Thank you for purchasing this JVC colour video camera head.

The TK-1070E is a colour video camera head using a single CCD (Charge Coupled Device) solid-state pickup element.

This camera head is for use in an image processing system (processing system for picture composition, graphics, editing, synthesis, measurement, recognition, analysis, etc.) shooting such material as images of paintings, photographs, real subjects, etc. for processing.

This instruction manual is divided into three sections: English, German and French.

English	Pages	2 - 17
German	Pages	18 - 33
French	Pages	34 - 50

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FEATURES

- 2/3" high-precision CCD (Charge Coupled Device) (with approx. 440,000 effective pixels) solid-state pickup element for clear pictures without image lag, burn or geometrical distortion.
- High-resolution design for a horizontal resolution of 470 TV lines (separated Y/C video signals).
- Optical RGB filters to realize superior colour reproduction.

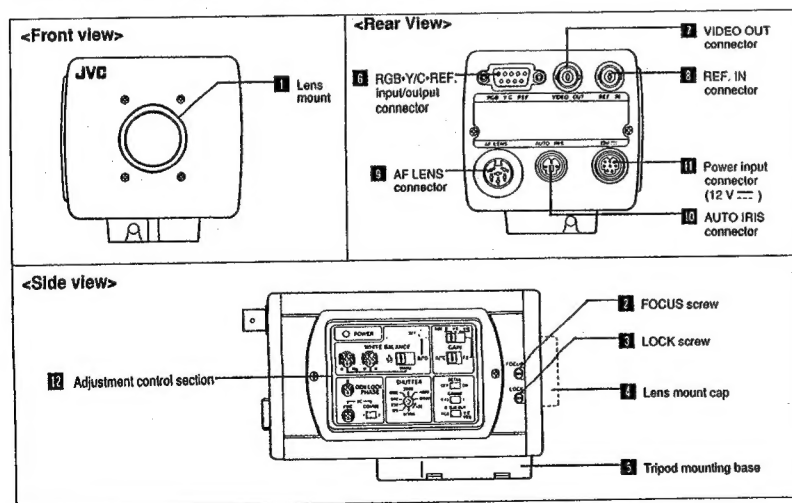
- Outputs 3 types of video signal: composite video signal, separated Y/C video signals and RGB colour video signals.
- Gen-lock operation is possible by inputting an external sync reference signal (HD, VD, composite video signal or black burst signal).
- Gamma correction switch to allow connection to a wider range of systems.
- All switches, adjustment controllers and button can be operated from the side of the unit.
- White balance adjustment with three settings "halogen lamp", "MANU" or "AUTO (memory)", according to the colour temperature of the ambient light.
- Built-in electronic shutter allows switching between 9 shutter speeds.
- AGC (Automatic Gain Control) function to automatically increase camera's sensitivity when the level of ambient light drops.
- DETAIL switch to emphasize edges of the playback pictures.
- Convenient external flange-back adjustment function.
- Designed for use with optional video camera lens HZ-C611AF(U) (F1.2, f=11-66 mm, 6:1 zoom ratio, auto focus, electric zoom).
- The camera can be installed using either the bottom or top panel, according to the installation location.

PRECAUTIONS

(INSTALLATION)

- **Never expose the camera to rain or water.**
Water can cause malfunctions and damage the camera.
- **Do not install the camera where the temperature could exceed the allowable range.**
If used at extremely low or high temperatures, the camera could be damaged (allowable operating temperature range 0°C to +40°C).
- **Avoid installing in a humid or dusty place.**
This could damage the camera.
- **Avoid installing in places where there is radiation.**
This could damage CCD and other components and cause a malfunction.
- **Avoid installing in places where there are strong magnetic fields and electric signals.**
The picture could be distorted.
- **Avoid installing in places where the camera would be subject to strong vibrations.**
This could damage components and degrade the picture.
- Also fully read "Precautions (use)" on page 16.

CONTROLS AND THEIR LOCATIONS

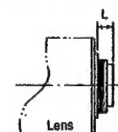


1 Lens mount

This mount is for the installation of a C-mount lens. Install the optional video camera lens HZ-C611AF(U) exclusively designed for this camera. A 2/3" C-mount lens for a TV camera also can be installed.

Note:

- If distance L of the lens (shown below) is more than 8 mm, the lens cannot be installed on this camera.



2 FOCUS screw

When a lens is mounted, the adjustment of flange-back (the distance from the lens mounting position to the focal point) may sometimes be required. When the flange-back is not correct, focusing may not be possible with the focus ring of the lens. Turn this screw to adjust the flange-back so that the best focus can be obtained. Loosen the LOCK screw when adjusting, and re-tighten it upon completion.

3 LOCK screw

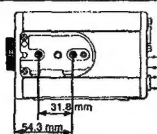
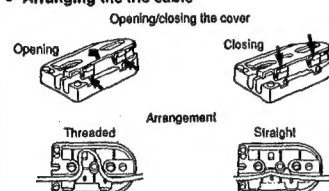
Loosen this screw when turning the FOCUS screw to adjust the flange-back (the distance from the lens mounting position to the focal point). Upon completion of adjustment, re-tighten it.

4 Lens mount cap

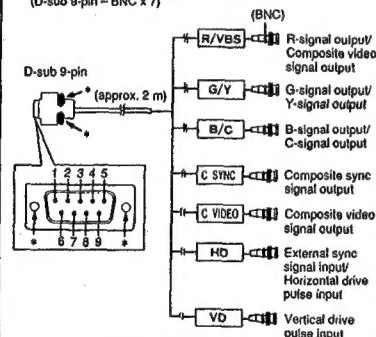
The cap prevents dirt getting into the camera and protects internal parts from dirt and damage. Be sure to cap the lens mount when the lens is not mounted.

5 Tripod mounting base

This is the base for installing the camera. 2 screw holes (1/4"-20UNC) are provided for mounting the camera on a fixed or rotating base or tripod. When the case is to be installed on the top panel, reposition the tripod base on the top panel. Since the 2 screw holes are provided, if you want to strengthen the installation, use both screw holes. The iris cable of the lens can be stored and fixed in this base.

• Dimensions**• Arranging the Iris cable**

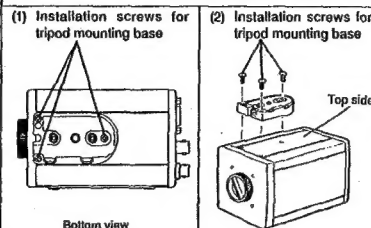
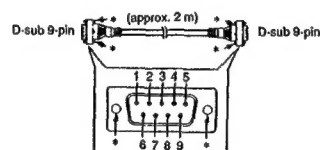
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• Camera cable VC-463-2E (optional)
(D-sub 9-pin - BNC x 7)

- Use 2.6 mm-diameter screws (millimetric pitch screw) when attaching plug.

• Repositioning procedure

- (1) Remove the three screws (black) retaining the tripod mounting base to remove it from the bottom panel.
- (2) Attach the tripod mounting base to the top panel with three screws (black).

**• D-sub - D-sub cable VC-452-2E (optional)**
(D-sub 9-pin - D-sub 9-pin)

- Use 2.6 mm-diameter screws (millimetric pitch screw) when attaching plug.

6 RGB-Y/C-REF. input/output connector

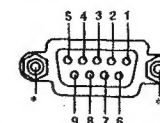
This connector outputs either RGB video signals or separated Y/C video signals (select with the RGB-Y/C select switch. See "13 Adjustment control section" on page 11.), the composite video signal, and composite sync signal. Also, the external sync reference signal (composite video signal, black burst signal and HD. VD) can be input to this connector.

Connect this connector to the video signal connector of an image processing system. When the connectors of the image processing system are BNC connectors, use the optional camera cable VC-463-2E.

In the case of a D-sub connector, use the optional D-sub - D-sub cable VC-452-2E.

Notes:

- Use a connection cable with an impedance of 75 ohms. (The cable should be as short as possible.)
- When the external sync reference signal to be input is less than -4 dB with respect to the reference level, sync operation is not possible.
Reference level:
Composite video signal = 1 Vp-p, 75 ohms
Black burst signal = 0.45 Vp-p, 75 ohms
HD. VD = 4 Vp-p, 75 ohms (Negative)
- Do not input the composite video signal (or black burst signal) and the HD. VD together.
- Do not input the external sync reference signal to both REF. IN connector and the RGB-Y/C-REF. input/output connector.
- When the optional camera cable VC-451-2E is used, gen-lock operation with HD. VD is not possible.

Pin assignment: RGB-Y/C-REF. input/output connector (D-sub 9-pin)

- Use 2.6 mm-diameter screws (millimetric pitch screw) when attaching plug.

Pin No.	Signals when RGB is selected	Signals when Y/C is selected
1	Vertical drive pulse input (VD)	
2		GND
3	R (RED) output	Composite video output (VBS)
4	G (GREEN) output	Y (luminance) output
5	B (BLUE) output	C (chroma) output
6	Composite video signal output (VBS)	
7	Composite sync output (C. SYNC)	
8		GND
9	External sync input (VBS, B.B.), Horizontal drive pulse input (HD)	

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7 VIDEO OUT connector

BNC connector to output a composite video signal. Connect to the video input connector of a monitor, VTR, etc.

8 REF. IN connector

BNC connector to input the external sync reference signal, such as a composite video signal or black burst signal. When the sync reference signal is input, the camera automatically switches from the internal to external sync mode to perform gen-lock operation.

Notes:

- When the external sync reference signal to be input is less than -4 dB with respect to the reference level, sync operation is not possible.
Reference level:
Composite video signal = 1 Vp-p, 75 ohms
Black burst signal = 0.45 Vp-p, 75 ohms
- When operating the camera using the internal sync reference signal, unplug the connector.
- When the external sync reference signal is being input to the RGB-Y/C-REF. input/output connector, do not use this connector.

9 AF LENS connector

Connect the lens plug of the optional video camera lens HZ-C611AF(U) to this connector.

Note:

- When picture is wholly bright or dark, adjust it by Iris Compensation knob. (Iris is automatically set regardless of iris compensation setting.)

Pin assignment: AF LENS connector (DIN 6-pin)

Pin No.	Signal
1	DC 12V
2	GND
3	DC 8.5V
4	—
5	Iris control DC voltage
6	GND

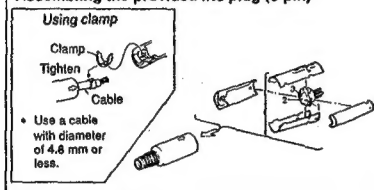
- 10 AUTO IRIS connector**
When using an auto-iris lens other than the optional HZ-C611AF(U), connect the iris cable of the lens to this connector.
- Notes:**
- Use auto-iris lenses using with a power consumption of 50 mA or less.
 - If the cable has a plug of a different type, replace with the provided 3-pin iris plug.

Pin assignment: AUTO IRIS connector (3-pin)



Pin No.	Signal
1	GND
2	Video (0.7 Vp-p, high impedance, no sync)
3	DC 11.5 V (50 mA max)

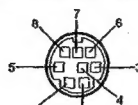
Assembling the provided Iris plug (3-pin)



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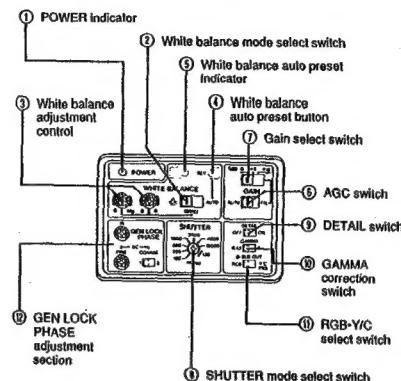
- 11 Power input connector (12 V =)**
Input connector for power (DC 12 V).
Use the provided cable for connecting the camera to optional AC adapter AC-C724 (for the UK) or AC-C722 (for countries other than the UK).
- Note:**
- Use a power source of DC 12 V.

Pin assignment: Power input connector (8-pin)



Pin No.	Signal
1	—
2	GND (DC 12 V)
3	—
4	GND
5	GND (DC 12 V)
6	DC 12 V
7	GND
8	DC 12 V

- 12 Adjustment control section**
Adjust and set, according to the shooting conditions and the equipment connected to the camera. After completing adjustments and settings, install the control section cover (provided, refer to page 13).



- 1 POWER Indicator**
Lights when the camera is powered.
- 2 White balance mode select switch**
[, MANU, AUTO]
Selects the white balance mode.
- : For shooting under the artificial light such as halogen lamps (colour temperature approx. 3200K).
 - MANU : Manual adjustment is possible.
 - AUTO : For setting to the white balance stored by the white balance auto preset button.
- 3 White balance adjustment controls [G-Mg, B-R]**
When the white balance mode select switch is set to "MANU", the white balance can be adjusted manually. (Use correctly adjusted colour monitor to check the white balance.)
- G-Mg : Turn to the "G" side to increase the amount of green in the picture.
Turn to the "Mg" side to increase the amount of magenta.
 - B-R : Turn to the "B" side to increase the amount of blue.
Turn to the "R" side to increase the amount of red.

- 4 White balance auto preset button [SET]**
With the white balance mode select switch set to "AUTO", the white balance required for a particular lighting can be stored in memory. Press the white balance auto preset button to memorize the white balance, while shooting a white object. The white balance auto preset indicator lights. (Colour temperature that can be stored in memory is from 2800K to 6000K.)

Note:

- When the shooting conditions change (when the colour temperature of the lighting changes), reset the white balance.

- 5 White balance auto preset Indicator**
Lights to indicate that the white balance has been stored in memory.

- 6 AGC (Automatic Gain Control) switch**
[AUTO, FIX]

Switches the setting of the camera's sensitivity.

AUTO : AGC activated. The camera's sensitivity is automatically made to increase when the level of ambient light drops.

FIX : The sensitivity set with the Gain select switch is engaged.

Note:

- When set to "AUTO", if the AGC is activated, the playback picture will become slightly grainy.

- 7 Gain select switch [0, +6, +12]**
Switches the sensitivity when the AGC switch is set to "FIX".

- 0 : Normal sensitivity is engaged.
- +6 : Sensitivity increased by 6 dB.
(The picture becomes slightly grainy.)
- +12 : Sensitivity increased by 12 dB.
(The picture becomes grainy.)

- 8 SHUTTER mode select switch**

This varies the shutter speed (the time the charge is stored). Normally, when a fast-moving object is being shot, still or slow-motion played back pictures will be blurred. In this case, switching the shutter speed from the normal speed of 1/25 second to a faster speed allows each frame to be recorded with greater detail, at the higher speed.

Switch position	Shutter speed
NORM	1/25 second Normally, set to this position.
120	1/120 second
125	1/125 second
250	1/250 second
500	1/500 second
1000	1/1000 second
2000	1/2000 second
4000	1/4000 second
10000	1/10000 second

Notes:

- Faster shutter speeds require more light than the normal speed. (In the 1000 mode, the sensitivity is approx. 1/40 that at normal speed; in the 10000 mode, approx. 1/400.)
- At faster shutter speeds, shooting with artificial lighting (especially fluorescent lights) will cause the pictures to flicker. Smear (bright horizontal or vertical lines) which can often be seen with solid-state pickups may appear in the picture.

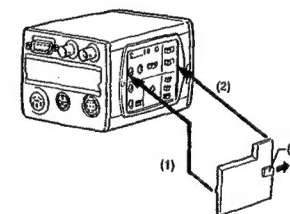
- 9 DETAIL switch**
Emphasizes the edges of the playback picture.
- ON : Emphasizes the edges of the picture. When connecting a monitor, etc., set to this position.
 - OFF : The edges of the picture are not emphasized. When connecting an image processing system, etc., set to this position.

- 10 GAMMA correction switch**
Switch depending on the connected equipment.
- 0.45 : Gamma is corrected. When connecting a monitor, VTR, etc., set to this position.
 - 1 : Gamma is not corrected. When connecting an image processing system, etc., set to this position.

- 11 RGB-Y/C select switch [D-SUB OUT]**
Switches the output signals of the RGB-Y/C-REF. input/output connector.
- RGB : Outputs RGB signals, composite video signal and composite sync signal.
 - Y/C VBS : Outputs separated Y/C video signals, composite video signal and composite sync signal.

- 12 GEN LOCK PHASE adjustment section**
See "ADJUSTMENT FOR GEN-LOCK OPERATION" on page 15.

Installation of the control section cover (provided)



- (1) Insert the lug of the cover into the hole.
- (2) Cover the section.
- (3) Slide the cover lock knob in the direction of the arrow to secure it.

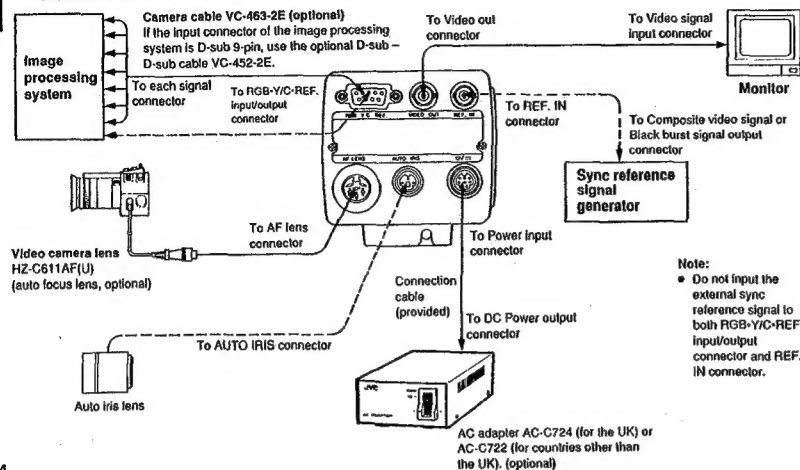
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13

CONNECTION EXAMPLES

- Do not supply power to any of the connected equipment until all the connections are completed.
- Thoroughly read the instruction manuals of all equipment to be connected.



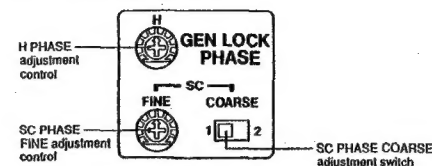
Note:
Do not input the external sync reference signal to both RGB-Y/C-REF. input/output connector and REF. IN connector.

ADJUSTMENTS FOR GEN-LOCK OPERATION

When performing gen-lock operation by inputting an external sync reference signal, adjust the phase if necessary. The horizontal phase (H PHASE) needs to be adjusted and also colour sub-carrier phase (SC PHASE) adjustment is necessary when the external sync reference signal is a composite video signal or a black burst signal.

Notes:

- Gen-lock operation may become unstable using a signal containing severe jitter such as the signal played back by a VTR.
- For more details, consult your local dealer.



- Horizontal phase adjustment [H PHASE]**
Adjusts the horizontal phase by this controller.
- Colour sub-carrier phase adjustment [SC PHASE]**
Adjusts the colour sub-carrier phase by these controllers. Adjust by changing the setting (1 or 2) of the SC PHASE COARSE adjustment switch in conjunction with the SC PHASE FINE adjustment control. (This adjustment is not necessary when the external sync reference signal is HD. VD. Also, this has no effect on RGB signals.)

PRECAUTIONS

(USE)

When operation is incorrect or a malfunction is observed:

While operating, if any abnormal condition (strange sound, smell or smoke) or a malfunction (no picture, etc.) is observed, stop using the camera immediately, turn the power off, then call your local dealer.

Cleaning

Turn the power off and wipe off the dirt with a dry soft cloth. If it is extremely dirty, use furniture cleaner to wipe it off. To clean the lens, use a blower or lens cleaning tissue (available from any camera dealer).

- Do not point the camera at the sun. This could damage the camera, whether it is operating or not.
- Do not shoot any source of bright light. If the object contains very bright areas, bright vertical or horizontal lines may appear on the screen. This is called "smear", a phenomenon which often occurs with solid-state pick-ups, and is not a malfunction.
- Do not disassemble the camera and never touch parts inside the camera as you could damage the camera.
- Do not allow anything to get inside the camera. If a metal or flammable object gets inside the camera, it may cause a malfunction.
- Handle with care. Do not drop the camera or subject it to shocks and vibrations to avoid possible damage.

Also fully read "Precautions (installation)" on page 3.

SPECIFICATIONS

Type	: Colour video camera head
Signal system	: Based on PAL standard
Pick-up element	: 2/3" CCD solid-state image sensor, single CCD complementary colour system
Effective pixels	: 756 (H) x 581 (V)
Scanning lines	: 625 lines, 2:1 Interlaced
Sync system	: Internal/External (Automatic)
Sync input	: Composite video signal: 1 Vp-p, 75 ohms Black burst signal: 0.45 Vp-p, 75 ohms HD, VD: 4 Vp-p, 75 ohms (Negative)
Sync output	: Composite sync signal: 2 Vp-p, 75 ohms (Negative)
Video output	: Composite video signal: 1 Vp-p, 75 ohms Separated Y/C video signals: Y: 1 Vp-p, 75 ohms C: 0.3 Vp-p (burst signal), 75 ohms RGB video signals: 0.7 Vp-p, 75 ohms
Video S/N (standard)	: 47 dB (Gain select to "0", detail switch set to "OFF", gamma correction switch set to "0.45", shutter mode select switch set to "NORM")
Horizontal resolution	: Composite: 460 TV lines Y/C: 470 TV lines RGB: 460 TV lines
Recommended illumination	: 2000 lux (f/5.0, 3200K)
Switching function	: Gain select (AUTO, 0, +6 dB, +12 dB)
Shutter mode (NORM, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000)	
White balance mode (halogen lamp, MANU, AUTO)	
Detail select (ON, OFF)	
Gamma correction select (0.45, 1)	
D-Sub output select (RGB, Y/C VBS)	
Adjustments	: Flange-back, manual white balance (2 axes: G-Mg, B-R), H PHASE adjustment, SC PHASE adjustment
Lens mount	: C mount
Power requirement	: DC 12 V ($\pm 10\%$)
Power consumption	: 8.7 VA
Operating temperature range	: 0°C to +40°C
Operating humidity	: Less than 90% Rh (non-condensing)
Maximum external dimensions	: 83.5(W) x 135(D) x 82(H) mm (including tripod mounting base and control section cover)
Weight	: Approx. 710 g (Only body)
Provided accessory	: Iris plug (3-pin) x 1 Lens mount cap x 1 Connection cable x 1 Control section cover x 1 (The lens mount cap is attached when shipped.)

- Design and specifications subject to change without notice.
- This colour video camera head is designed to output video signals conforming to the PAL standard, so that it cannot be used with video recorders and colour monitors which use colour systems other than PAL.